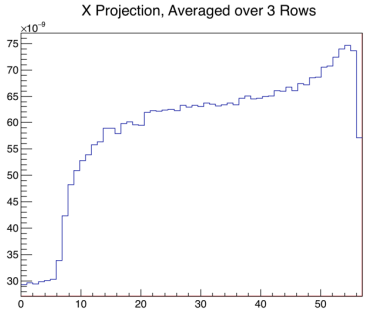
CU Boulder
Panel Test Update

Sebastian Vazquez and Sebastian Seeds

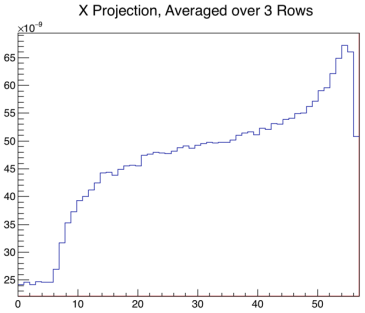
A Brief Recap

A systematic light gradient was noted in the panels sent to us.

SiPM 1



SiPM 2



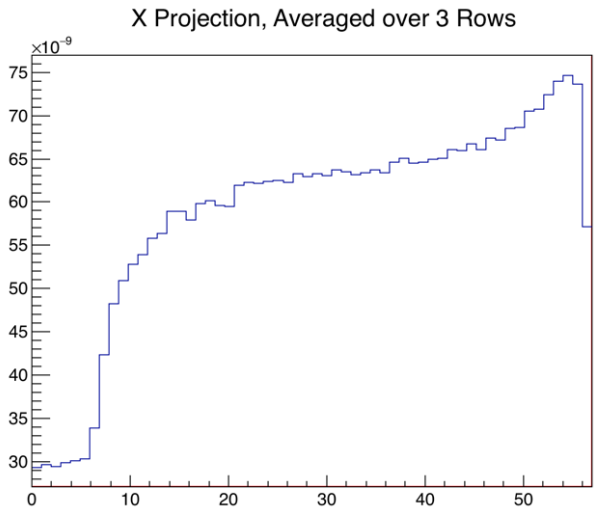
➔ Tested the effect of: the presence of the diffusive coating, rotation of the panel, and misalignment relative to the beta source.

➔ Explored the possibility that the sudden increase in light yield on the right side of the panel is caused by a trigger bias with the discriminator unit.

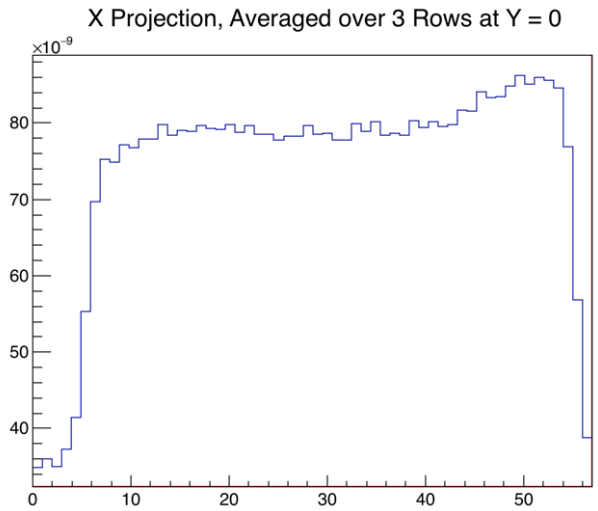
Preliminary Test Results

It was found that panels lacking the diffusive coating displayed a much smaller gradient than the coated panels.

With Coating



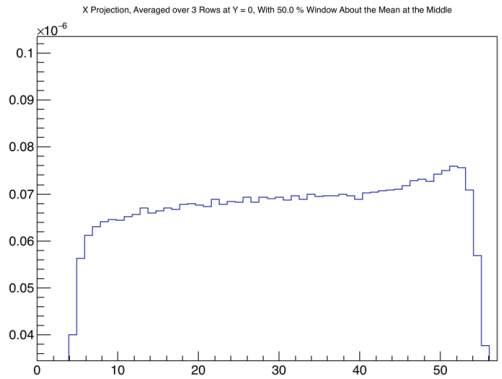
Without Coating



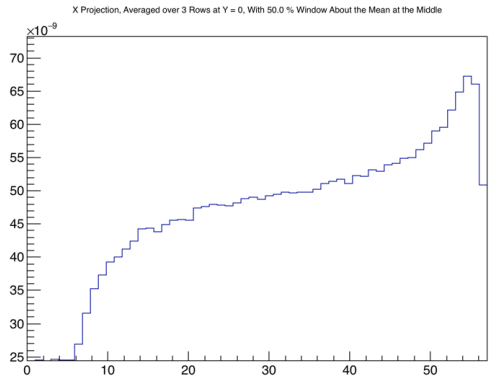
Recoupling Effects

It was found that simply uncoupling and recoupling the fibers from the SiPMs led to significant problems with reproducibility.

Control



Recoupled



Current New Stand Status

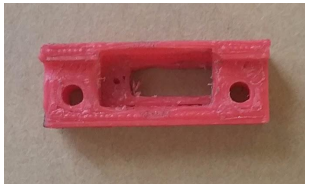
- Pre-amps have been assembled.
- However, the pre-amps are drawing an abnormal amount of current when running at the specified voltages (high or low 6-20 mA).
- We are not seeing a signal out of the pre-amps and are concerned that something is malfunctioning.

- Gen 3 mounting brackets are currently being printed.

New Mounting Brackets

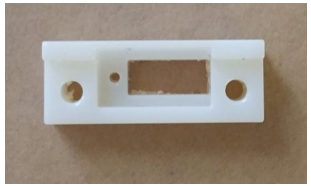
New more precise mounting brackets have been 3D printed to minimize the effects of uncoupling and recoupling.

Gen 1



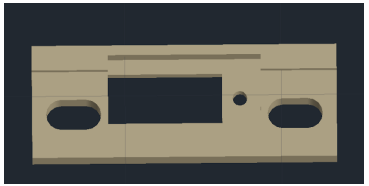
- First print with our 3D printer was completely unusable, as the SiPMs would not fit in the mounting bracket.

Gen 2



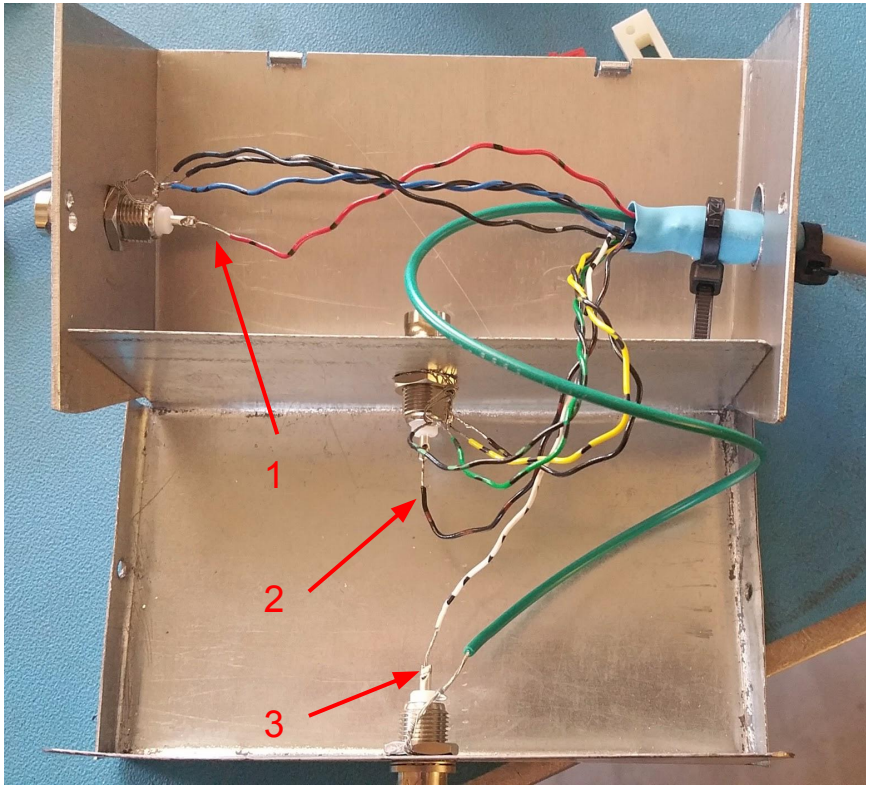
- Using another department's printer, the brackets printed perfectly, but when attached to the panel, the fiber and SiPM only aligned for 25% of fibers.

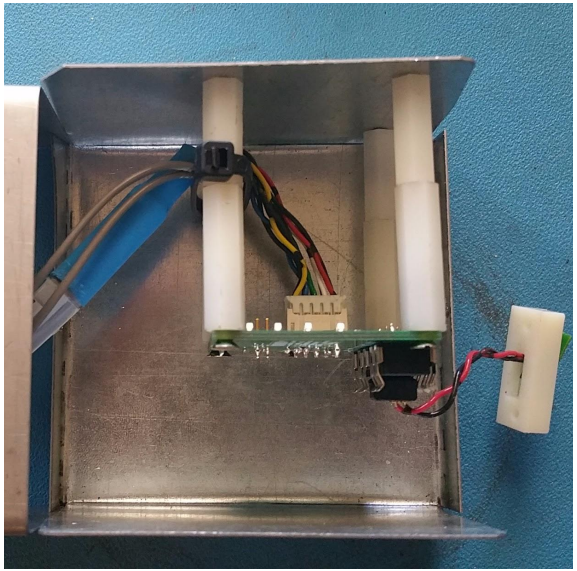
Gen 3



- Currently being printed

New Pre-Amps





1. Negative Bias
2. Black/Red: +8V @ 49mA (mA by spec)
3. White/Black: -5V @ -37mA (mA by spec)

All other control connectors are grounded out

Lollipop Issues

Resistance between any two leads is zero.

We are concerned that something is shorting in the lollipop (1).

Resistance between any lead and the coax cable out is infinite.

Plans for the next two weeks

We intend to find out what exactly is wrong with the new pre-amp/SiPM setup and fix it.

Once the setup is fully operational, we will begin scanning the panels we have already received and seek to explain the trends we saw within the panels in previous scans.